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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,496	10/13/2005	Georg Eimer	870-003-197	3692

4955 7590 03/09/2007  
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EXAMINER
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NGUYEN, NINH H

ART UNIT	PAPER NUMBER
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3745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/553,496

Applicant(s)

EIMER, GEORG

Examiner

Ninh H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12-19 is/are rejected.
- 7) ☒ Claim(s) 9-11 and 20-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/13/059.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Gill (1,518,501).

Gill discloses a propeller (Figs. 1-11) comprising a cylindrical housing (Fig. 6) having an inner side which defines an air conveying conduit in which the propeller is arranged, the propeller being rotatable about a central axis and including a central hub H having an outer periphery on which are mounted propeller blades whose radially outer rims are each at a distance from the adjacent inner side of fan housing, wherein each of the blades is shaped like an airfoil profile of an aircraft (Figs. 8-10), the blades each being implemented in concave and sickle-shaped fashion on their front edge (Fig. 7) in such a way that a radially outer end of a sickle is located, with reference to a rotation direction of the fan wheel, farther forward in a circumferential direction than a hub-side end of the sickle, and the blades are furthermore each twisted between the hub-side end and the radially outer end and have a convex rear edge (Figs. 8-10), and along the twisted radial outer edge of each propeller blade and adjacently to the inner side of the external housing, a flow element K is provided which has an outline analogous to that of the associated fan blade and which is implemented as a flow-pattern obstacle for a compensating flow proceeding around that twisted radial outer edge from the delivery side to the intake side;

wherein the external housing is formed with at least one strut L (Figs. 8-10) extending transversely to the air conveying conduit, and the rear edge of the blades is implemented convexly, in such a way that upon rotation of the propeller each rear edge viewed in plan, intersects that strut at different locations at successive points in time;

wherein the convex rear edge is implemented with grazing intersection (Figs. 8-10);

wherein the concavely sickle-shaped front edge has a region that lags the most with reference to the rotational motion, which region is located substantially at the transition from the hub to the front edge of the relevant blade (Fig. 7);

wherein the concavely sickle-shaped front edge encloses, with the region of the hub located in front of the relevant blade, an angle that is equal to approximately 90 degrees or less (judging from Fig. 7);

wherein the blade is twisted in such a way that it has a thread pitch which is greater at the hub than near radially outer edges of the blade (page 4, lines 12-16);

wherein the propeller blades each have, viewed in a sagittal section, a profile that corresponds approximately to an airfoil profile (Figs. 8-10); and

wherein the respective flow elements extend at least locally on both a delivery side of the fan and an intake side of the propeller, along respective radially outer rims of the propeller blades (Fig. 6).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Houten (6,595,744) in view of Chou (5,181,830).

Van Houten discloses a fan (Figs. 5a-c) comprising an air conveying conduit (Fig. 5b) and a fan wheel 10 arranged therein, which wheel is rotatable about a central axis and is formed with a central hub 45 having an outer periphery on which are mounted fan blades that extend with their radially outer rims as far as surface that is substantially coaxial with the central axis and delimits the air conveying conduit externally, which blades each has a profile that is shaped like the airfoil profile (Fig. 5c);

wherein each of the blades has a front edge which is concave (Fig. 5a) and sickle-shaped so that defining forward with respect to a rotation direction of the fan, a radially outer end of a sickle projects further forward than does a hub-adjacent end of the sickle;

wherein the blades are each twisted (Fig. 5c) in such a way that their pitch at the hub is greater than the pitch in the region of the radially outer edge;

wherein the blades are implemented in the region of the rear edge convexly and with grazing intersections (judging from Fig. 5b); and

wherein the fan further comprises an external housing 20 from which there extends away at least one strut proceeding transversely to the air conveying conduit, and the rear edge of the

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blades is implemented convexly in such a way that upon rotation of the fan wheel, that rear edge, viewed in plan, intersects that strut at different locations at successive points in time (judging from Fig. 5b).

However, Van Houten does not disclose a respective flow element that is implemented as a flow-pattern obstacle for a compensating flow proceeding around that radial outer edge from the delivery side to the intake side; which flow element is likewise cross-sectionally shaped substantially like an airfoil profile, and has adjacent its front edge and the rear edge of a blade substantially the same outline as the adjacent part of the associated blade, and in the middle region between the front and back edge is wider by an approximately constant amount, than the adjacent part of the blade as claimed.

Chou teaches a fan comprising a plurality of blades extend radially from a hub, the fan blades each has on the tip region a body 12 (Fig. 6) having an airfoil profile to reduce fan noise (col. 2, lines 22-26); the body 12 is cross-sectionally shaped substantially like an airfoil profile, and has adjacent its front edge and the rear edge of a blade substantially the same outline as the adjacent part of the associated blade, and in the middle region between the front and back edge is wider by an approximately constant amount, than the adjacent part of the blade (Figs. 2, 6);

wherein in a transition region between the front edge and middle region, a ratio of the axial extension of the flow element to the axial extension of the adjacent blade increases in the direction away from the front edge (Fig. 6);

wherein in a transition region between the rear edge and middle region a ratio of the axial extension of the flow element to the axial extension of the adjacent blade increases in the direction away from the rear edge (Fig. 6); and

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wherein the flow elements, extend at least locally, on both sides along the radially outer rim of the fan blades (Figs. 2, 6).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made, to make the fan of Van Houten with the body 12 of Chou for the purpose of reducing fan noise as taught by Chou.

#### ***Allowable Subject Matter***

Claims 9-11, and 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Prior art***

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 2 patents.

Belady (6,517,315) and Ivanovic (6,626,640) are cited to show different fans having flow elements at the blade tips.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ninh Nguyen whose telephone number is (571) 272-4823. The examiner can be normally reached on Monday-Friday from 7:30 A.M. to 5:00 P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (571) 272-4820. The fax number for this group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, please go to <http://pair-direct.uspto.gov> or contact the Electronic Business center (EBC) at 866-217-9197 (toll-free).

  
NINH H. NGUYEN  
PRIMARY EXAMINER

Nhn  
March 5, 2007